EPA Region 7 TMDL Review

TMDL ID	273	*Water Body ID*	3230
Water Body Name	Shoal Creek		
Pollutant	Fecal Coliform Bacteria		
Tributary			
State	Missouri	*HUC*	11070207-020001
Basin	Spring		
Submittal Date	10/29/2003		
Approved	yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

Letter from MDNR dated October 27, 2003 was received by EPA on October 29, 2003 thus formally submitting the Shoal Creek TMDL for approval. Revisions to pages 5, 6, 9, 10, and 17-20 dated November 6, 2003 were received November 10, 2003.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

Water quality attainment for Shoal Creek's whole body contact recreation beneficial use is Missouri's standard for fecal coliform bacteria which states, for periods when the stream or lake is not affected by stormwater run-off, the fecal coliform count shall not exceed two hundred colonies per one hundred milliliters during the recreational season. The recreational season is from April 1 to October 31. This is a phased TMDL.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

The numeric target is the numeric water quality standard of 200 colonies per 100 milliliter for whole body contact recreation, expressed as a TMDL load duration curve.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

Potential nonpoint sources that include livestock, poultry litter, domestic animals, wildlife, and failing septic systems have been contributing to excessive fecal coliform bacteria loads in the stream. The Food and Agriculture Policy Research Institute (FAPRI) at the University of Missouri was contracted for analysis and simulation of bacterial loading and transport in the basin. Another component of the study involved microbial source tracking in order to determine the source of the fecal contamination.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

All likely sources, including humans, cattle, poultry, domestic animals, and wildlife were considered in the TMDL. There is one point discharger in the watershed, Camp Barnabas (permit MO-0125164) which has a flow design of 12,000 gallons per day. Another non-discharging permit for George's Poultry, Inc., (permit MO-0108618) has violations but has been corrected in a settlement agreement on May 7, 2001. Nonpoint source discharge was broken up into categories of 1). Direct nonpoint source loading into SWAT included contributions from sewage from houses 250 feet of the stream and 2). Nonpoint source loading which included poultry litter spread on pastures or manure deposits from grazing animals.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

Loads were calculated using SWAT from a 50 year long simulation period with data for the last 30 years. A flow duration curve was generated by multiplying the 200 col/100 ml standard with generated flows.

WLA Comment

The single point source discharger's contribution is relatively small. WLA is based on the maximum daily limit at design flow conditions and therefore set at 4.5455 x E8 colonies per day.

LA Comment

The load allocation is based on a continuous flow duration curve calculated over a range of flow conditions. Specific loading capacities were calculated by multiplying the flow rate, the 200 col/100 ml standard, and a conversion factor. To compare the impact of the nonpoint sources, scenarios were modeled.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

An explicit margin of safety is given and is based on the standard deviations from storm flow rates, mixed flows, and base flows. The standard deviation of the flows in each of the 3 flow categories was calculated and multiplied by 200 colonies/100ml in order to calculate the standard deviation of the load capacity. Each standard deviation was then averaged within each flow segment.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

Contact recreation period extends from April 1 to October 31 of each year. This TMDL addresses seasonal variation by associating a daily load to every flow.

Public Participation

Submital describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

Three public meetings were held in Monett, Missouri on May 22, 2003, June 26, 2003, and August 14, 2003. The TMDL was public noticed from August 29 to September 28, 2003. Copies of the TMDL were sent to stakeholders and were available on the internet. Four individuals submitted comments and their comments were taken into account.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

Continued monitoring of flows, water quality, and DNA host identification will continue till the end of 2003. Crowder College will continue to collect fecal bacteria data through the middle of 2004. Scenario runs in SWAT suggested eliminating septic discharges, reducing the number of cattle directly in the stream, along with a substantial reduction in the nonpoint source load will result in fecal bacteria counts less than 200 colonies/100ml.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

Reasonable assurance is not required because of the insignificant contribution of the one point source discharger. Nonetheless, a Shoal Creek watershed group will evaluate the various methods needed to address the fecal coliform bacteria. An existing law that states sanitary sewage should not leave a landowner's property should lead to a reduction of sanitary sewage. 319 funds can fund projects such as fences to keep cattle out and provide alternate watering systems. Department of Agriculture EQIP funds may provide cost share benefits for buffer strips and riparian corridor restoration.